

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

EXHIBIT A

“Compounds of Silicon” as available at

<http://www.webelements.com/webelements/compounds/text/Si/N4Si3-12033895.html>

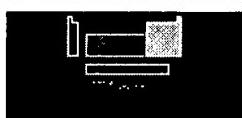
For Serial No.: 09/981,402
Applicant(s): SATOH, Yoshihiro

**Chemistry: WebElements Periodic Table: Professional Edition: Silicon: compound data
[silicon (IV) nitride]**

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Silicon

14

Si

28.0855(3)

Compounds of silicon:

silicon (IV) nitride

- **Formula as commonly written:** Si_3N_4
- **Hill system formula:** N_4Si_3
- **CAS registry number:** [12033-89-5]
- **Formula weight:** 140.283
- **Class:** nitride

Synonyms

- silicon (IV) nitride
- silicon nitride
- trisilicon tetranitride

Physical properties

- **Colour:** grey
- **Appearance:** crystalline solid
- **Melting point:** 1900°C
- **Boiling point:**
- **Density:** 3200 kg m⁻³

Element analysis and oxidation numbers

For each compound, and where possible, a formal oxidation number for each element is given, but the usefulness of this number is limited, especially so for *p*-block elements in particular. Based upon that oxidation number, an electronic configuration is also given but note that for more exotic compounds you should view this as a guide only.

Thermodynamic properties	Element	%	Formal oxidation state	Formal electronic configuration						
crystallography	N	39.94	-3	[He].2s ² .2p ⁶	Cl					
Crystal structure [view VR world] [view pdb image]	Si	60.06	4	[Ne]	Br					
nuclear properties	Synthesis									
NMR	Not available									
Naturally occurring isotopes										
Radioisotopes										
WebElements	Solid state structure									
WebElements Scholar Edition	<ul style="list-style-type: none"> • Geometry of silicon: 4 coordinate: tetrahedral • Prototypical structure: 									
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Isotope pattern

What follows is the calculated isotope pattern for the Si_3N_4 unit with the most intense ion set to 100%.

Formula: Si_3N_4

mass	%	
140	100.0	—
141	16.7	—
142	11.1	—
143	1.2	—
144	0.4	—
145	0.0	—
146	0.0	—

Suppliers

Coming soon....

References

The data on these compounds pages are assembled and adapted from the primary literature and several other sources including the following.

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WebElements is the periodic table on the WWW

WebElements™, the periodic table on the WWW, URL: <http://www.webelements.com/>
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